MiniModule™ SIO
PC/104 Expansion Module
Reference Manual

P/N 50-1Z038-1000 Revision 1.0

Notice Page

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Audience Assumptions

This manual provides reference only for computer design engineers, including but not limited to hardware and software designers and applications engineers. ADLNK Technology, Inc. assumes you are qualified to design and implement prototype computer equipment.

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Chapter 1 About This Manual

Purpose

This manual provides technical information to allow embedded system designers to expand their embedded systems.

Information provided in this manual includes:

- MiniModule SIO board specifications
- Environmental requirements
- Major Integrated Circuit (IC) definitions
- MiniModule SIO board header and connector definitions

Information not provided in this manual includes:

- Detailed chip specifications
- Internal component operation
- Internal registers or signal operations
- Bus or signal timing for industry standard busses and signals
- Industry standard connector pinout tables

References

The following list of references may help you successfully complete your design.

Specifications

- LPC Specification Revision 1.1, August, 2002

  Web site: http://www.intel.com/design/chipsets/industry/25128901.pdf
- MiniBlade Specification Revision 1.00, March 6, 2009

  Web site: http://www.sff-sig.org/miniblade.html
- SUMIT Specification Revision 1.4, May 14, 2009

  Web site: http://www.sff-sig.org/sumit_spec_v10.pdf
- PC/104 Specification Revision 2.5, November 2003

  Web site: http://www.pc104.org

Major Integrated Circuit (ICs) Specifications:

- Fintek, Inc. and the LPC-to-ISA Bridge, F85226FG

  Web site: http://www.fintek.com.tw/files/productfiles/F85226AF_V020P.pdf
- SMSC, Inc. and the LPC Super I/O, SCH3114I-NU

  Web site: http://www.smsc.com/media/Downloads_Public/Data_Briefs/311xdb.pdf
- Maxim Integrated Products and the RS-232 Transceiver, MAX213EEAI

  Web site: http://datasheets.maxim-ic.com/en/ds/MAX202E-MAX241E.pdf
- Linear Technology and the RS-422/485 Transceiver, LTC1334CG#PBF

  Web site: http://cds.linear.com/docs/Datasheet/1334fa.pdf

Chapter 2 Product Overview

This introduction presents general information about Stackable architecture and the MiniModule SIO expansion board. After reading this chapter you should understand:

- Stackable Architecture
- MiniModule SIO Features
- MiniModule SIO Product Description
- MiniModule SIO Major Components and Headers
- MiniModule SIO Specifications

Stackable Architecture

Stackable architecture affords a great deal of flexibility in system expansion. The SUMIT interface allows you to add legacy I/O to a legacy-free CoreModule board by simply stacking an ADLINK MiniModule SIO board onto the CoreModule SUMIT connectors. Expanding a simple CoreModule system by adding self-stacking MiniModule SIOs or 3rd party PC/104 expansion boards provides functional capabilities such as:

- Analog or digital I/O (including serial, parallel, and USB 2.0)
- PCIe links
- ISA bus

PC/104 expansion modules can be stacked with the MiniModule SIO, avoiding the need for card cages and backplanes. PC/104 expansion modules can be mounted directly to the PC/104 bus connector of the MiniModule SIO with an inter-board spacing of ~0.60 inches so that a 3-module system fits in a 3.6 x 3.8 x 2.4 inch space. See Figure 2-1.

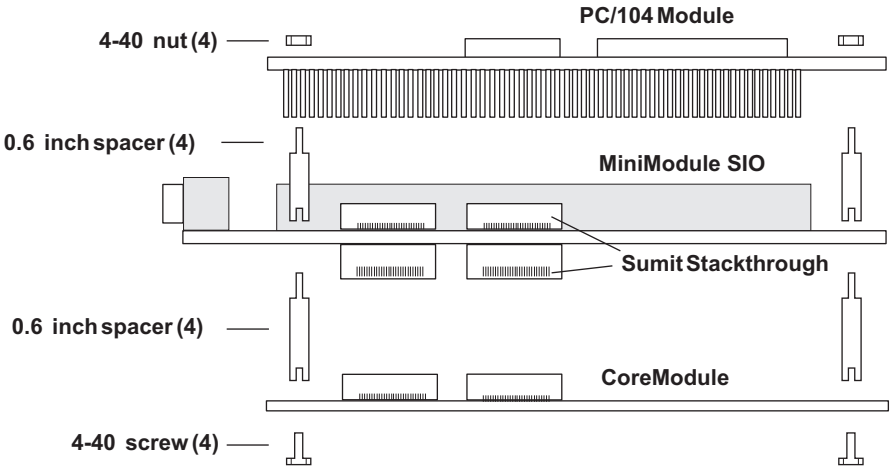

Figure 2-1. Stacking the MiniModule ISA with CoreModule Product

Product Description

The MiniModule SIO is a bus bridge module providing LPC-to-ISA bridge conversion for PC/104 compatible expansion boards. The expansion bus connectors of the MiniModule SIO conform to the SUMIT and PC/104 standards and can be installed directly onto ADLINK's CoreModule Single Board Computer (SBC). The necessary Serial IRQ signals are provided through the SUMIT A interface at pin 34. The MiniModule SIO receives +3.3V, +5V, and +12V power through the SUMIT A interface and +3.3V and +5V through the SUMIT B interface. The J18 header receives +5V and +12V for the PC/104 ISA bus.

In addition to the ISA bridge function, the MiniModule SIO includes a Mini-Blade socket, four serial ports, one I2C header, two USB ports, one parallel port (LPT) header, two headers for PS/2 mouse and keyboard, and one LPC header.

Module Features

- Supports PC/104 Bus expansion interface
- Provides ISA bus signals through PC/104 connector
- Transparent to the Operating System

LPC Super I/O

- Integrates hardware monitor functions
- Provides Two high-speed 16550 compatible UARTs with 16-byte send/receive FIFOs
- Supports PS/2 compatible bi-directional parallel port

LPC-to-ISA Bridge Controller:

- Provides full ISA bridge support except bus master (by conditions)
- Provides 16-bit and 8-bit I/O and memory R/W
- Provides ISA parallel IRQ transfer to serial IRQ by IRQ serializer
- All ISA signals can be isolated

Block Diagram

Figure 2-2 shows the functional components of the module.

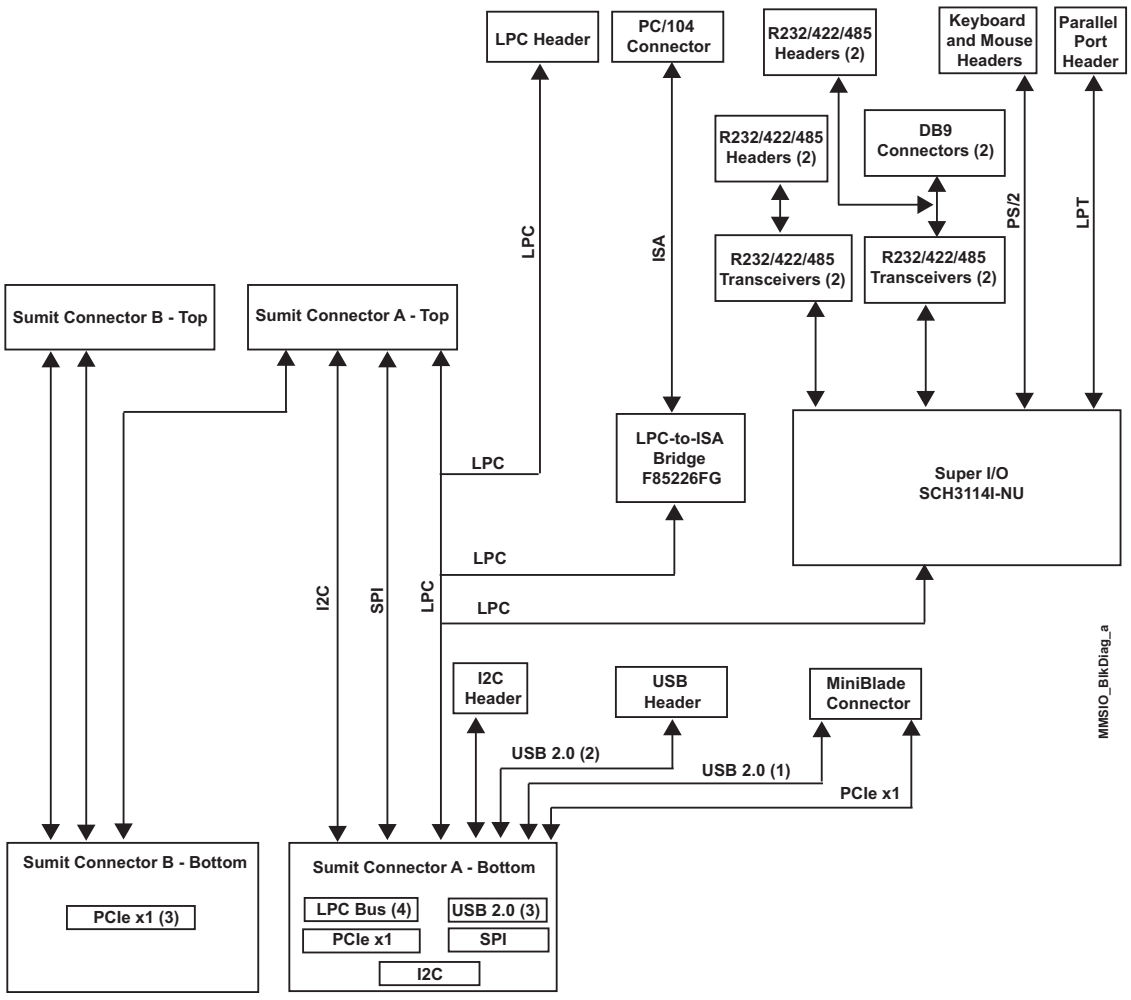

Figure 2-2. MiniModule SIO Block Diagram

Major Integrated Circuits (ICs)

Table 2-1 lists the major ICs on the MiniModule SIO, and Figures 2-3 and 2-4 show the locations of the major ICs.

Table 2-1. Major Integrated Circuit Description and Function

Chip Type	Mfg.	Model	Description
LPC-to-ISA Bridge (U6)	Fintek	F85226FG	Converts LPC to ISA signal for use with legacy ISA interfaces.
LPC Super I/O (U7)	SMSC	SCH3114I-NU	Functions for legacy I/O
RS-232 Transceiver (U8)	Maxim	MAX213EEAI	RS-232 Transceiver for COM1 and COM2
RS-485/422 Transceiver (U10)	Linear	LTC1334CG#PBF	RS-422/485 Transceiver for COM1 and COM2
RS-232 Transceiver (U12) [On top side of board; see Figure 2-4]	Maxim	MAX213EEAI	RS-232 Transceiver for COM3 and COM4
RS-485/422 Transceiver (U14) [On top side of board; see Figure 2-4]	Linear	LTC1334CG#PBF	RS-422/485 Transceiver for COM3 and COM4

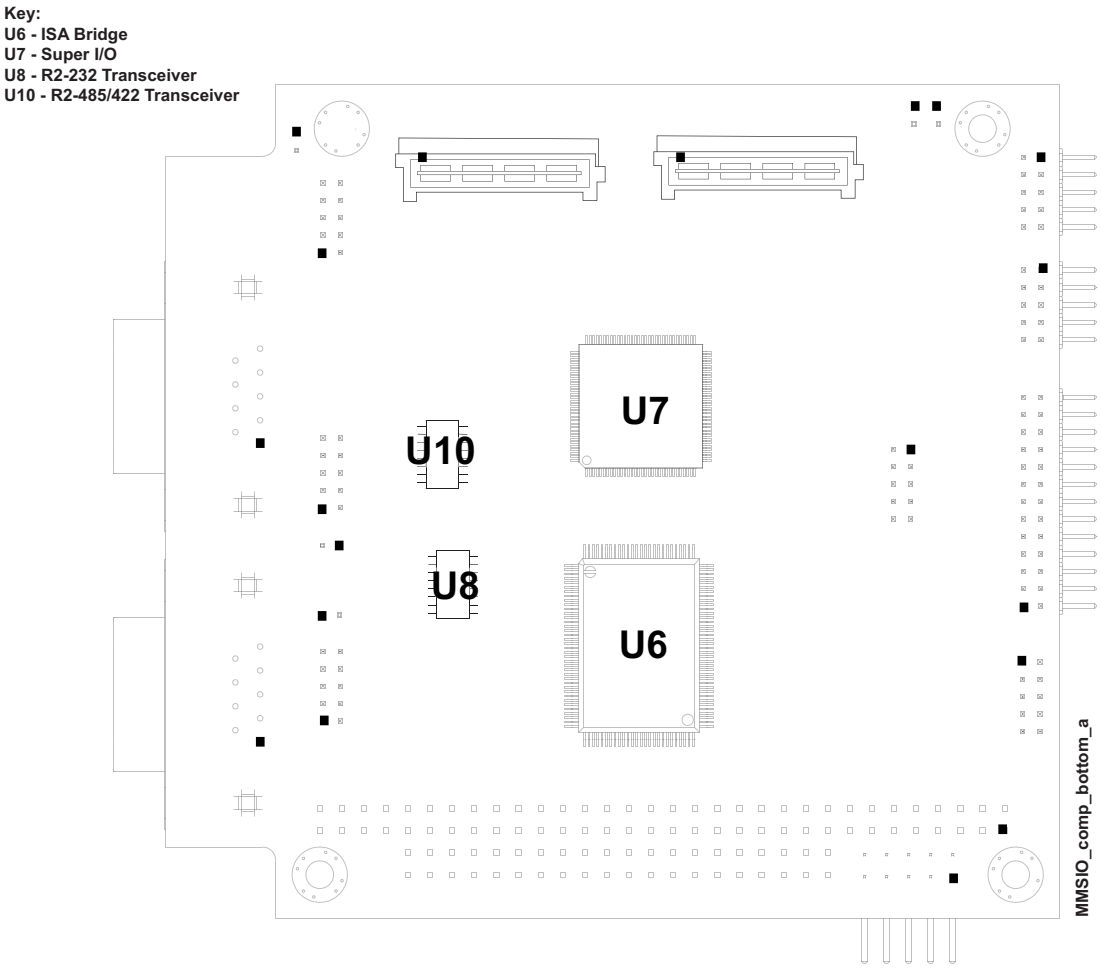

Figure 2-3. MiniModule SIO Components (Bottom-Side View)

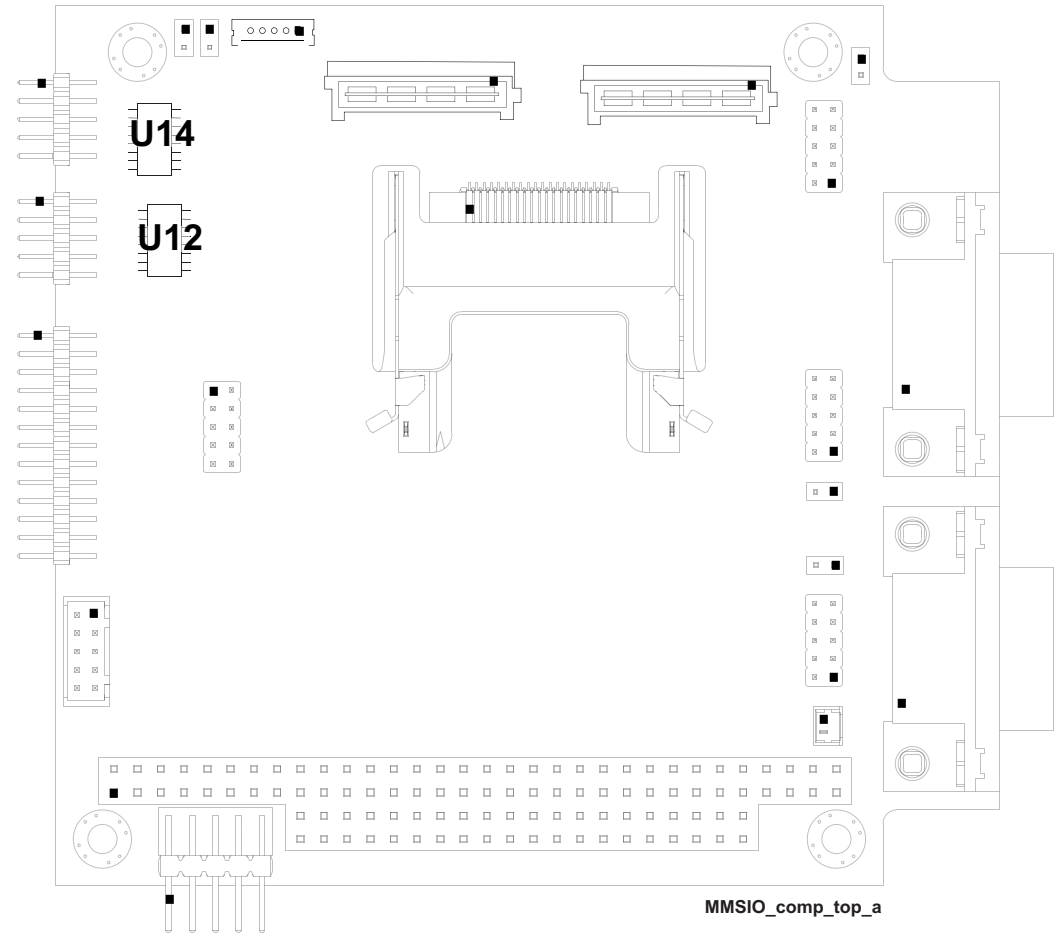

Figure 2-4. MiniModule SIO Components (Top-Side View)

Headers, Connectors, and Sockets

Table 2-2 describes the headers, connectors, and sockets shown in Figures 2-6 and 2-8.

Table 2-2. Module Header, Connector, and Socket Descriptions

Jack/Plug #	Board Access	Description
J1 – SUMIT A	Top	52-pin, 0.025" (0.635mm) connector for USB, PCIe, Power, ACPI, SMBus, I2C, SPI, LPC, Serial, Keyboard, Mouse, and Clock signals
J2 – SUMIT B	Top	52-pin, 0.025" (0.635mm) connector for PCIe and Power
J3 – SUMIT A [On bottom side of board; see Figure 2-7]	Bottom	52-pin, 0.025" (0.635mm) connector for USB, PCIe, Power, ACPI, SMBus, I2C, SPI, LPC, Serial, Keyboard, Mouse, and Clock signals
J4 – SUMIT B [On bottom side of board; see Figure 2-7]	Bottom	52-pin, 0.025" (0.635mm) connector for PCIe and Power
J5 – Battery	Top	2-pin, 0.049" (1.24mm), shrouded header for VBAT supply voltage to the SIO **NOTE** MMSIO battery cannot be used concurrently with the CM730 battery.
J6 – Serial	Top	9-pin, 0.109" (2.77mm) DB9 connector for serial port 1 (COM1)
J7 – Serial	Top	10-pin, 0.079" (2.0mm) header for serial port 1 (COM1)
J8 – Serial	Top	9-pin, 0.109" (2.77mm) DB9 connector for serial port 2 (COM2)
J9 – Serial	Top	10-pin, 0.079" (2.0mm) header for serial port 2 (COM2)
J10 – Serial	Top	10-pin, 0.079" (2.0mm), right-angle header for serial port 3 (COM3)
J11 – Serial	Top	10-pin, 0.079" (2.0mm), right-angle header for serial port 4 (COM4)
J12 – NA	NA	Not available
J13 – USB	Top	10-pin, 0.079" (2.0mm) header for USB1 and USB2 ports
J14 – I^2C	Top	5-pin, 0.049" (1.25mm) header for I^2C bus signals
J15 – Parallel	Top	26-pin, 0.079" (2.0mm) right-angle header for printer port (LPT1)
J16 – Keyboard and Mouse	Top	10-pin, 0.079" (2.0mm), shrouded header for Keyboard and Mouse signals
J17 – PC/104	Top	104-pin, 0.100" (2.54mm) connector for PC/104 (ISA) bus
J18 – Power In	Top	10-pin, 0.100" (2.54mm), right-angle header for external power to PC/104 (ISA) bus (required for most PC/104 ISA cards)
J19 – MiniBlade Socket	Top	40-pin, 0.031" (0.80mm), right-angle edge socket for flash storage module
J20 – SUMIT A/B Wake	Top	2-pin, 0.079" (2.0mm) jumper header for selecting SUMIT A/B connectors to wake simultaneously. See Table 2-3 on page 12.
J21 – LPC	Top	10-pin, 0.079" (2.0mm) header for LPC signals

NOTE The pinout tables in Chapter 3 of this manual identify pin sequences using the following methods: A 10-pin header with two rows of pins, using odd/even numbering, where pin 2 is directly across from pin 1, is noted as 10-pin, 2 rows, odd/even (1, 2). Alternately, a 10-pin header using consecutive numbering, where pin 6 is directly across from pin 1, is noted in this way: 10-pin, 2 rows, consecutive (1, 6). The second number in the parenthesis is always directly across from pin 1. See Figure 2-5.

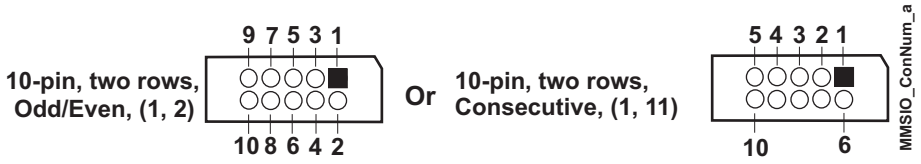

Figure 2-5. Connector Pin Identifications

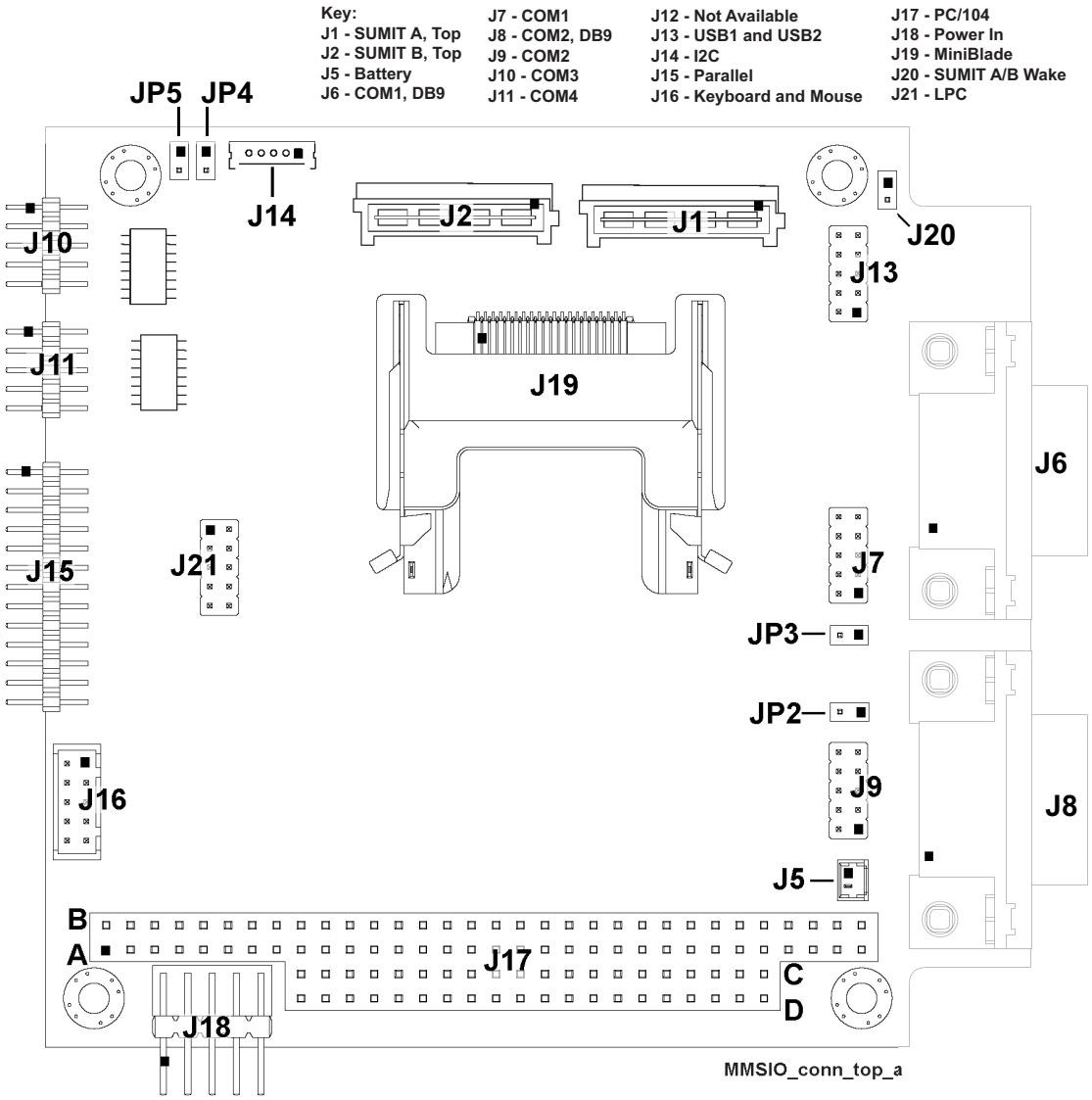

Figure 2-6. Header and Connector Locations (Top-Side View)

NOTE Pin 1 is shown as a black square on vertical headers and connectors and DB9 connectors. Black squares on right-angle headers indicate pin 2 on the top side and pin 1 on the bottom side.

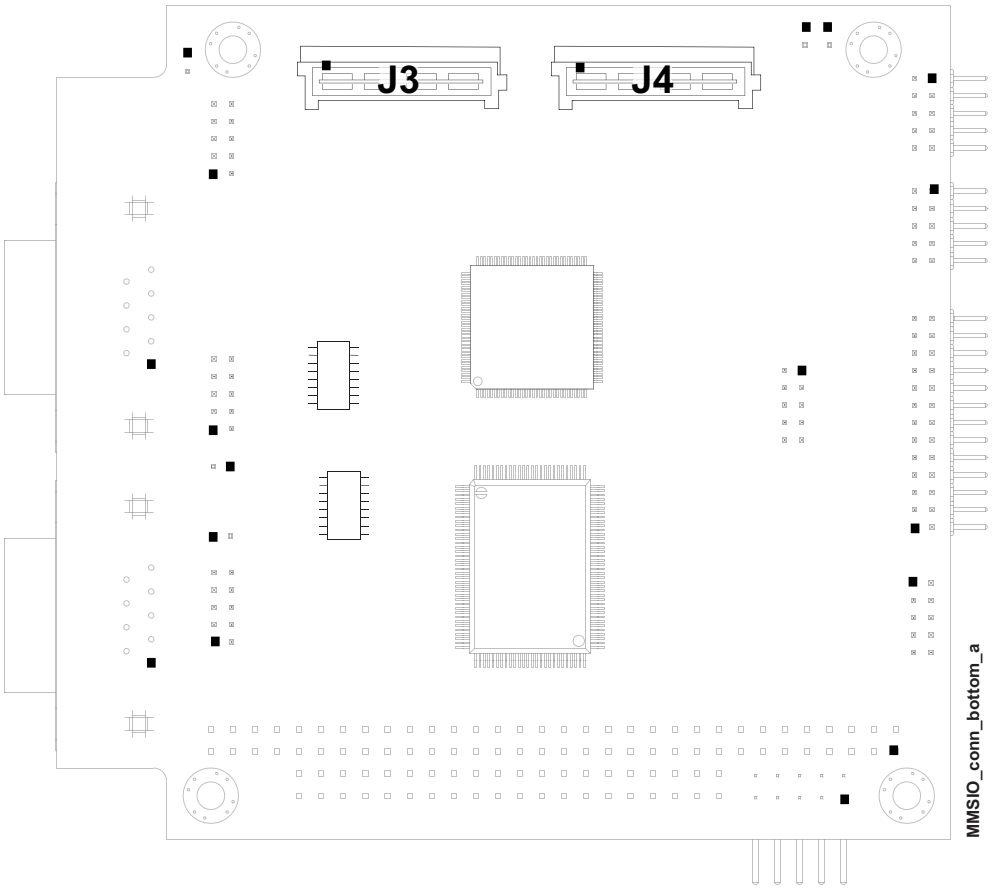

Figure 2-7. Header and Connector Locations (Bottom-Side View)

Jumper Settings

Table 2-3 defines the jumper header pins shown in Figure 2-8.

Table 2-3. Jumper Header Pin Definitions

Jumper #	Installed/Enabled	Removed/Enabled
JP2 – RS-485/422 for COM2	Enable (pins 1-2)	Disable (removed) **Default**
JP3 – RS-485/422 for COM1	Enable (pins 1-2)	Disable (removed) **Default**
JP4 – RS-485/422 for COM4	Enable (pins 1-2)	Disable (removed) **Default**
JP5 – RS-485/422 for COM3	Enable (pins 1-2)	Disable (removed) **Default**
J20 – SUMIT A/B Dual Wake Control	Enable (pins 1-2)	Disable (removed) **Default**

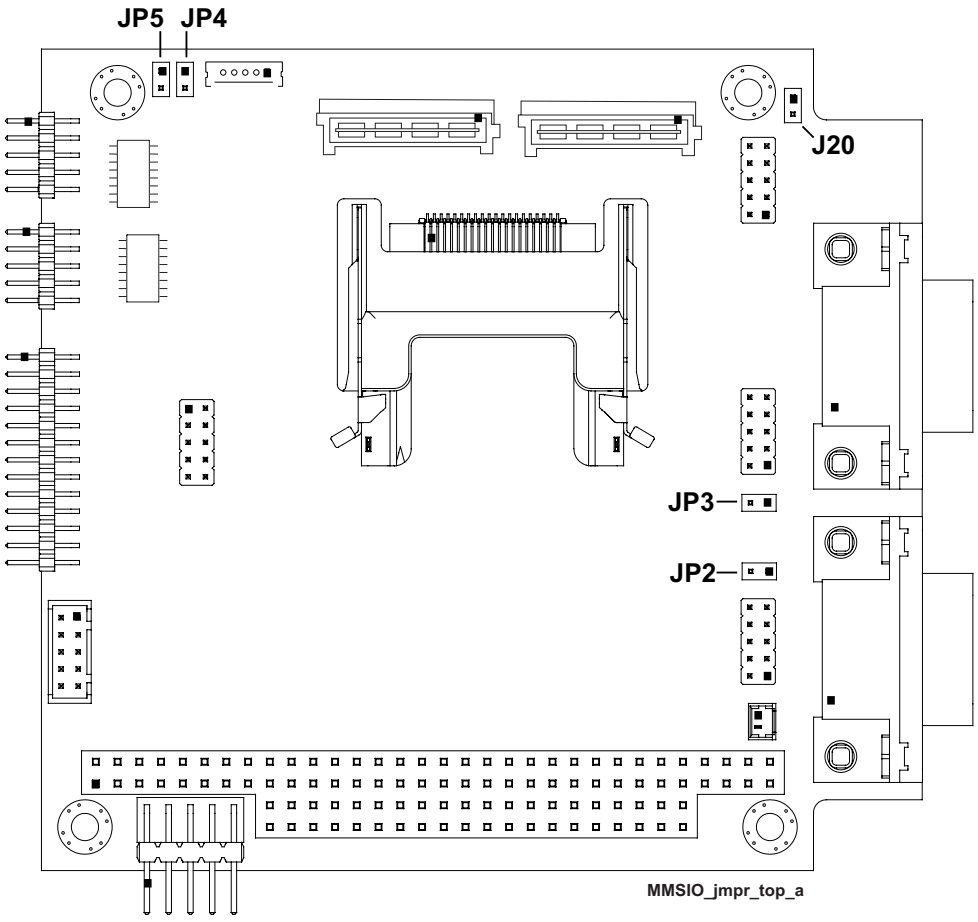

Figure 2-8. Jumper Locations (Top-Side View)

Specifications

Physical Specifications

Table 2-4 shows the physical dimensions of the module, and Figure 2-9 gives the mounting dimensions.

Table 2-4. Weight and Footprint Dimensions

Item	Dimension
Weight	0.100kg. (0.200lbs.)
Height (overall)	10.75 mm (0.423 inches)
Width	95.89 mm (3.775 inches)
Length	102.87 mm (4.05 inches)

Mechanical Specifications

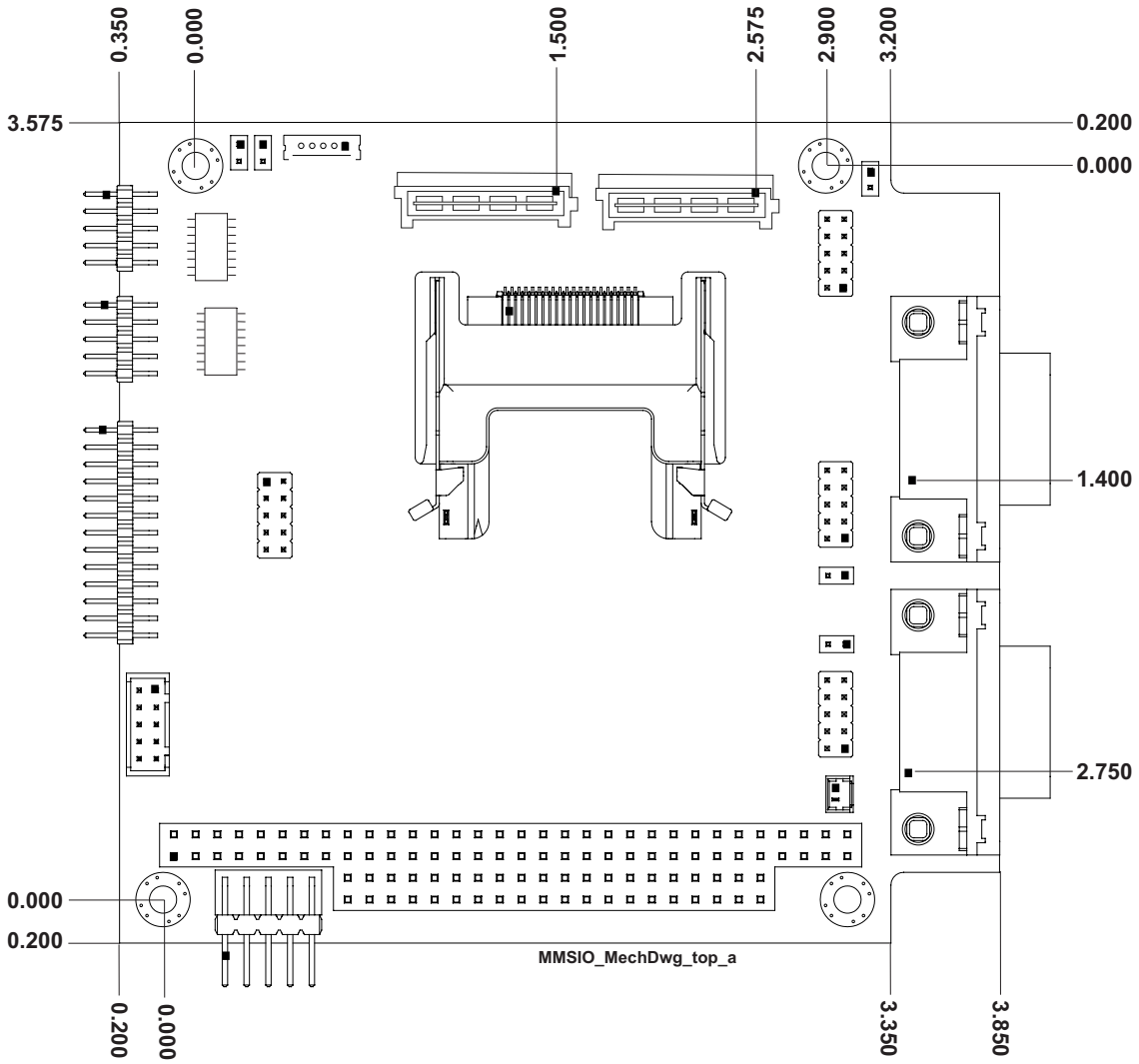

Figure 2-9. Mechanical Dimensions (Top-Side View)

NOTE All dimensions are given in inches. Pin 1 is shown as a black pin (square or round) on vertical headers and connectors and DB9 connectors. Black squares on right-angle headers indicate pin 2.

Power Specifications

Table 2-5 provides the power requirements for the MiniModule SIO powered by the CoreModule 730 SBC.

Table 2-5. Power Supply Requirements

Parameter	Characteristics for 1.6GHz CPU
Input Type	Regulated DC voltages
In-rush Current (Maximum)	1.81A (9.05W)
Idle Power	1.00A (5.00W)
BIT* Current (Typical)	1.99A (9.95W)

Operating configurations:

- In-rush operating configuration includes CoreModule 730 SBC, CRT video, and 1GB DDR2 RAM.
- Idle operating configuration includes the In-rush configuration as well as on-board 128MB Compact Flash, one PATE hard drive, one mouse, and one keyboard.
- *BIT = Burn-In-Test operating configuration includes Idle configuration as well as one USB Compact Flash reader with 64MB Compact Flash, one Ethernet connection, and one USB CD-ROM drive.

Environmental Specifications

Table 2-6 provides the operating and storage condition ranges required for this module.

Table 2-6. Environmental Requirements

Parameter	Conditions
Temperature	
Operating	–20° to +70° C (–4° to +158° F)
Extended (Optional)	–40° to +85° C (–40° F to +185° F)
Storage	–55° to +85° C (–67° F to +185° F)
Humidity	
Operating	5% to 90% relative humidity, non-condensing
Non-operating	5% to 95% relative humidity, non-condensing

Thermal/Cooling Requirements

The LPC-to-ISA bridge controller (U6) and the Super I/O controller (U7) are sources of heat on the board, and neither of these devices requires a heatsink.

Chapter 3 Hardware

Overview

This chapter discusses the user interfaces of the module in the following order:

- MiniBlade Storage Solution
- Serial Interfaces
- Parallel Interface
- USB Interfaces
- I^2C Bus
- Keyboard/Mouse Interface
- Power In Interface
- Battery Interface
- LPC Interface

> **NOTE** ADLINK Technology, Inc. supports only the features tested and listed in this manual. The integrated circuits used in the MiniModule SIO may provide more features than are listed for the MiniModule SIO, but some of these features are not supported on the module and will not function as specified.
>
> This chapter includes pinout tables only for non-standard headers and connectors. This chapter does not include pinout tables for standard headers and connectors such as Serial DB9, PC/104, and SUMIT.

MiniBlade Storage Solution

The MiniBlade consists of a 40-pin, right-angle socket interface. This socket will carry all of the appropriate USB signals. Possible uses for the storage system include a rugged flash storage device, rugged operating system boot device, or a rugged wireless transceiver.

Table 3-1 provides the pin signal definitions for the MiniBlade Storage System.

Table 3-1. MiniBlade Interface Pin Signal Definitions (J19)

Pin #	Signal	Description
1	+3VSB	Standby Voltage – Connecting the always-on standby voltage +3V to the target electronics allows the module to remain powered during low-power ACPI suspend/standby/sleep states for those SBCs that support ACPI.
2	SMB/I2C_DATA	
3	SATA+	Not connected
4	SMB/I2C_CLK	
5	SATA-	
6	SMB/ I2C_ALERT#	
7	+3V3_1	

Table 3-1. MiniBlade Interface Pin Signal Definitions (J19) (Continued)

8	+5V	
9	NC	Not Connected
10	LED	
11	NC	Not Connected
12	BLADE_REQ#	
13	+3V3_2	Not connected
14	NC	Not connected
15	GND1	
16	NC	Not Connected
17	USB+	
18	NC	Not Connected
19	USB-	
20	NC	Not Connected
21	GND2	
22	NC	Not Connected
23	A_PETP0	
24	NC	Not Connected
25	A_PETN0	
26	NC	Not Connected
27	BLADE_PRSNT#	
28	NC	Not Connected
29	A_PERP0	
30	NC	Not Connected
31	A_PERN0	
32	NC	Not Connected
33	GND3	
34	NC	Not Connected
35	A_CLKP	
36	NC	Not Connected
37	A_CLKN	
38	PERST#	
39	PCIE-PRSNT#	
40	WAKE#	

Note: The shaded area denotes power or ground. Signals marked with # indicate Active Low.

Serial Interfaces

The LPC Super I/O chip (SCH3114I-NU) provides the circuitry for four serial ports through four transceivers. Transceivers U8 and U12 provide RS-232 signals, and transceivers U10 and U14 provide RS-485/422 signals. The J7 and J9 headers each consist of 10 vertical pins, 2 rows, odd/even (1, 2) pin sequence, and 0.079" (2.0mm) pitch. The J10 and J11 headers each consist of 10 right-angle pins, 2 rows, odd/even (1, 2) pin sequence, and 0.079" (2.0mm) pitch. The two DB9 connectors, J6 and J8, are standard serial connectors, and those pinouts are not included in this manual. The J7 and J9 headers serve as internal alternatives to the DB9 connectors (COM1 and COM2). The four serial ports support the following features:

- Programmable word length, stop bits and parity
- 16-bit programmable baud rate generator
- Interrupt generator
- Loop-back mode
- Four individual 16-bit FIFOs
- Serial Interfaces:
  - Serial COM1 (J7) supports RS-232/RS-485/422 with full modem operation
  - Serial COM2 (J9) supports RS-232/RS-485/422 with full modem operation
  - Serial COM3 (J10) supports RS-232/RS-485/422 with full modem operation
  - Serial COM4 (J11) supports RS-232/RS-485/422 with full modem operation

NOTE The RS-485/422 mode for any serial port is selected in the BIOS Setup Utility. However, the RS-232 mode is the default for any serial port.

RS-485/422 mode termination is selected with jumper JP2 for COM2, JP3 for COM1, JP4 for COM4, and JP5 for COM3. Refer to Table 2-3 for more information.

To implement the two-wire RS-485 mode on any of the 10-pin serial headers, you must tie pin 3 (Rx Data –) to 5 (Tx Data –) and pin 4 (Tx Data +) to 6 (Rx Data +) as shown in Figure 3-1. As an alternate, you may short the equivalent pins on the DB9 connectors attached to respective serial ports, as shown in Figure 3-1. Refer also to Table 3-2 for the specific pin signals on each of the headers. The RS-422 mode uses a four-wire interface and does not require combining pins for its operation, but you must select RS-485 in BIOS Setup.

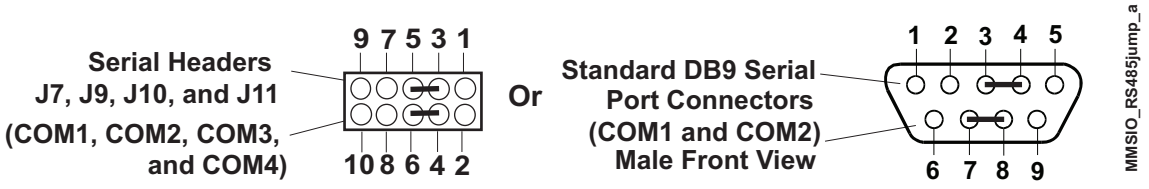

Figure 3-1. RS-485 Serial Port Implementation

Table 3-2 lists the pin signals for each of the serial headers (J7, J9, J10, and J11.) Refer to previous bullets in this section for port number identification.

Table 3-2. Serial Port Interface Pin Signal Definitions (J7, J9, J10, and J11)

Pin #	Signal	DB9 #	Description
1	DCD#	1	Data Carrier Detect – Indicates external serial device is detecting a carrier signal (i.e., a communication channel is currently open). In direct connect environments, this input is driven by DTR as part of the DTR/ DSR handshake.
2	DSR#	6	Data Set Ready – Indicates external serial device is powered, initialized, and ready. Used as hardware handshake with DTR for overall readiness.
3	RXD Rx Data –	2	Receive Data – Serial port receive data input is typically held at a logic 1 (mark) when no data is being transmitted, and is held "Off" for a brief interval after an "On" to "Off" transition on the RTS line to allow the transmission to complete. Serial Port 1 or 2 – If in RS-485 mode, this pin is Rx Data Negative.
4	RTS# Tx Data +	7	Request To Send – Indicates serial port is ready to transmit data. Used as hardware handshake with CTS for low level flow control. Serial Port 1 or 2 – If in RS-485 mode, this pin is Tx Data Positive.
5	TXD Tx Data –	3	Transmit Data – Serial port transmit data output is typically held to a logic 1 when no data is being sent. Typically, a logic 0 (On) must be present on RTS, CTS, DSR, and DTR before data can be transmitted on this line. Serial Port 1 or 2 – If in RS-485 mode, this pin is Tx Data Negative.
6	CTS# Rx Data +	8	Clear To Send – Indicates external serial device is ready to receive data. Used as hardware handshake with RTS for low level flow control. Serial Port 1 or 2 – If in RS-485 mode, this pin is Rx Data Positive.
7	DTR#	4	Data Terminal Ready – Indicates serial port is powered, initialized, and ready. Used as hardware handshake with DSR for overall readiness.
8	RI#	9	Ring Indicator – Indicates external serial device is detecting a ring condition. Used by software to initiate operations to answer and open the communications channel.
9	GND	5	Ground
10	Key/NC	NC	Key Pin/Not connected

Note: The shaded area denotes ground. Signals are listed in the following order: RS232 followed by RS485/RS422. Signals marked with # indicate Active Low.

Parallel (LPT) Port Interface

Table 3-3 provides the pin signal descriptions for the parallel port header consisting of 26 pins, 2 rows with odd/even (1, 14) pin sequence, and 0.079" (2.0mm) pitch.

Table 3-3. LPT Port Interface Pin Signal Definitions (J15)

Pin #	Signal	Descriptions
1	STRB*	Strobe – Output used to strobe data into the printer. I/O pin in ECP/EPP mode.
2	AFD*	Auto Feed – This is Request signal to the printer to automatically feed one line after each line is printed.
3	PD0	Parallel Port Data 0 – These signals (0 to 7) provide the parallel port data.
4	ERR*	Error – This is a Status output signal from the printer. A Low State indicates an error condition on the printer.
5	PD1	Parallel Port Data 1 – These signals (0 to 7) provide the parallel port data.
6	INIT*	Initialize – This signal is used to Initialize printer. Output in standard mode, I/O in ECP/EPP mode.
7	PD2	Parallel Port Data 2 – These signals (0 to 7) provide the parallel port data.
8	SLIN*	Select In – This signal Output used to select the printer. I/O pin in ECP/EPP mode.
9	PD3	Parallel Port Data 3 – These signals (0 to 7) provide the parallel port data.
11	PD4	Parallel Port Data 4 – These signals (0 to 7) provide the parallel port data.
13	PD5	Parallel Port Data 5 – These signals (0 to 7) provide the parallel port data.
15	PD6	Parallel Port Data 6 – These signals (0 to 7) provide the parallel port data.
17	PD7	Parallel Port Data 7 – These signals (0 to 7) provide the parallel port data.
19	ACK*	Acknowledge – This is a Status output signal from the printer. A Low State indicates it has received the data and is ready to accept new data.
21	BUSY	Busy – This is a Status output signal from the printer.
23	PE	Paper End – This is a Status output signal from the printer. A High State indicates it is out of paper.
25	SLCT	Select – This is a Status output signal from the printer. A High State indicates it is powered on.
26	Key	Not connected
10, 12, 14, 16, 18, 20, 22, 24	GND	Ground

Note: The shaded area denotes power or ground. The signals marked with * indicate signal inversion.

USB Interfaces

The MiniModule SIO provides two USB ports (USB1 and USB2) on a 10-pin header. The USB ports are protected with a power distributor that detects over-current situations and acts as a fuse to protect the ports and devices on the ports.

Table 3-4 lists the pin signals for the USB1 and USB2 header which consists of 10 pins, two rows, odd/even (1, 2) pin sequence, and 0.079" (2.0mm) pitch.

Table 3-4. USB1 and USB2 Interfaces Pin Signal Definitions (J13)

Pin #	Signal	Description
1	USB POWER 2	+5 volts power
2	USB POWER 1	+5 volts power
3	CONN USB2 N	USB2 data negative
4	CONN USB1 N	USB1 data negative
5	CONN USB2 P	USB2 data positive
6	CONN USB1 P	USB1 data positive
7	USB GND2	Ground
8	USB GND1	Ground
9	USB GND2	Ground
10	USB GND1	Ground

Note: The shaded areas denote power or ground.

I^2C Bus

Table 3-5 lists the pin signals for the I^2C bus which provides a medium-speed serial interface. The I^2C header consists of 5 pins, single row with 0.049" (1.25mm) pitch.

Table 3-5. I^2C Header Pin Signal Definitions (J14)

Pin #	Signal	Description
1	SCL	Serial Clock Line
2	GND	Ground
3	SDA	Serial Data Line
4	VSM	+3.3 Volts Power
5	ALERT#	I2C Alert

Note: The shaded areas denote power or ground. Signals marked with # indicate Active Low.

Keyboard/Mouse Interface

Table 3-6 lists the pin signals for the keyboard and mouse header which consists of 10 pins, 2 rows with odd/even (1, 2) pin sequence, and 0.079" (2.0mm) pitch.

Table 3-6. Keyboard/Mouse Interface Pin Signal Definitions (J16)

Pin #	Signal	Description
1	KEY VCC	+5 Volts
2	KEY DATA	Keyboard data
3	KEY CLK	Keyboard clock
4	KEY GND	Keyboard ground

Table 3-6. Keyboard/Mouse Interface Pin Signal Definitions (J16) (Continued)

5	KEY GND	Keyboard ground
6	KEY GND	Keyboard ground
7	KEY VCC	+5 Volts
8	DAT MOUSE	Mouse data
9	CLK MOUSE	Mouse clock
10	KEY GND	Keyboard ground

Note: The shaded area denotes power or ground.

Power In Interface

The PC/104 interface requires +12/5V power and is provided by the Power In header (J18). Though not recommended for use when the PC/104 add-on board is powered directly, the Power In header supplies the voltages shown in Table 3-7 directly to the PC/104 connector.

Table 3-7 describes the Power In Interface, which consists of a 10-pin, right-angle, header with two rows, odd/even (1, 2) pin sequence, and 0.100" (2.54mm) pitch.

Table 3-7. Power In Interface Pin Signal Descriptions (J18)

Pin #	Signal	Description
1	GND	Ground
2	+5	+5 Volts +/- 5%
3	Key/GND	Key Pin on connector/Grounded on board
4	+12V	+12 Volts +/- 5%
5	GND	Ground
6	NC	Not connected
7	GND	Ground
8	+5	+5 Volts +/- 5%
9	GND	Ground
10	+5	+5 Volts +/- 5%

Note: The shaded area denotes power or ground.

Battery Interface

An external battery connection is provided through the J5 header for the SIO VBAT supply voltage. Pin 1 is +3.3 volts power, and Pin 2 is Ground. See Figure 2-6 on page 10 for pin locations.

NOTE	MMSIO battery cannot be used concurrently with the CM730 battery.

LPC (Low Pin Count) Interface

The LPC interface provides expansion for custom LPC devices that require high-speed buses. The LPC header consists of 10 pins with 2 rows, odd/even (1, 2) pin sequence, and 0.050" (1.27mm) pitch. Table 3-8 describes the pin signals of the LPC interface.

Table 3-8. LPC Interface Pin/Signal Descriptions (J21)

Pin #	Signal	Description
1	V.3.3	+3.3 Volts Power
2	GND	Ground
3	NC	Not Connected
4	AD3	Command, Address, and Data 3
5	RESET*	Reset Signals - reset the connected LPC device
6	AD2	Command, Address, and Data 2
7	CLK_LPC	LPC Clock
8	AD1	Command, Address, and Data 1
9	FRAME*	Frame Signals - indicate start of new cycle or termination of broken cycle
10	AD0	Command, Address, and Data 0

Note: The shaded area denotes power or ground. Signals marked with # indicate Active Low.

Appendix A Technical Support

ADLINK Technology, Inc. provides a number of methods for contacting Technical Support listed below in Table A-1. Requests for support through the Ask an Expert are given the highest priority, and usually will be addressed within one working day.

- ADLINK's Ask an Expert – This is a comprehensive support center designed to meet all your technical needs. This service is free and available 24 hours a day through the Ampro By ADLINK web page at http://www.adlinktech.com/AAE/ . This includes a searchable database of Frequently Asked Questions, which will help you with the common information requested by most customers. This is a good source of information to look at first for your technical solutions. However, you must register online if you wish to use the Ask a Question feature.

  ADLINK strongly suggests that you register with the web site. By creating a profile on the ADLINK web site, you will have a portal page called "My ADLINK" unique to you with access to exclusive services and account information.

- Personal Assistance – You may also request personal assistance by creating an Ask an Expert account and then going to the Ask a Question feature. Requests can be submitted 24 hours a day, 7 days a week. You will receive immediate confirmation that your request has been entered. Once you have submitted your request, you must log in to go to My Stuff area where you can check status, update your request, and access other features.

- Download Service – This service is also free and available 24 hours a day at http://www.adlinktech.com. For certain downloads such as technical documents and software, you must register online before you can log in to this service.

Table A-1. Technical Support Contact Information

Method	Contact Information
Ask an Expert	http://www.adlinktech.com/AAE/
Web Site	http://www.adlinktech.com
Standard Mail	**ADLINK Technology Inc.** Address: 9F, No.166 Jian Yi Road, Chungho City, Taipei County 235, Taiwan 台北縣中和市建一路 166 號 9 樓 Tel: +886-2-8226-5877 Fax: +886-2-8226-5717 Email: service@adlinktech.com **Ampro ADLINK Technology Inc.** Address: 5215 Hellyer Avenue, #110, San Jose, CA 95138, USA Tel: +1-408-360-0200 Toll Free: +1-800-966-5200 (USA only) Fax: +1-408-360-0222 Email: info@adlinktech.com **ADLINK Technology Beijing** Address: 北京市海淀区上地东路 1 号盈创动力大厦 E 座 801 室 (100085) Rm. 801, Power Creative E, No. 1, B/D Shang Di East Rd., Beijing 100085, China Tel: +86-10-5885-8666 Fax: +86-10-5885-8625 Email: market@adlinktech.com

Table A-1. Technical Support Contact Information (Continued)

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